WHAT IS CLAIMED IS:

1. A method for manufacturing a composite sole for shoes having a tread sole that comprises vulcanized rubber coupled to a polyurethane mid-sole, the method comprising:

a) preparing a mix for the vulcanizable rubber, which is combined with at least one reinforcing filler and at least one vulcanization accelerator, and comprises a compound that contains:

a_1) at least one nitrile-based vulcanizable rubber, and

a_2) at least one acrylic resin;

b) introducing a metered quantity of said mix within a first cavity of a mold for forming a tread sole, said first cavity being formed by a pseudocylindrical side wall in which a sole bottom piston is movable, the first cavity being closed in an upper region by a first replaceable dummy last;

c) waiting for a vulcanization time, while keeping the sole bottom piston at temperatures of 100-200 °C and the dummy last at temperatures of 100-200 °C, said temperatures being adjustable independently;

d) moving the sole bottom piston with the tread sole in contact therewith, so as to generate a second cavity, and replacing the dummy last with a second dummy last or with a last with a fitted upper, and closing the second cavity with mold rings;

e) injecting or pouring into said second cavity a metered quantity of polyurethane to form the mid-sole;

f) waiting for a reaction time of the polyurethane to elapse, while keeping the second dummy last and the mold rings at a temperature lower than 120 °C;

g) removing the composite sole and allowing it to rest for a stabilization time.

2. The method of claim 1, wherein the rubber is kept at 100-110 °C before injecting or pouring the polyurethane.

3. The method of claim 2, comprising keeping the rubber at 100-110 °C by means of air jets.

4. The method of claim 1, wherein said nitrile-based rubber is of the medium-high nitrile type.

5. The method of claim 4, wherein said nitrile-based rubber has a low Mooney value (low viscosity).

6. The method of claim 4, wherein said nitrile-based rubber comprises a butadiene-acrylonitrile copolymer, commonly known as NBR.

7. The method of claim 1, wherein said acrylic resin is hydroxylated with hydroxyl.

8. The method of claim 7, wherein the hydroxyl is less than 2.

9. The method of claim 8, wherein said resin is provided in a naphtha solvent.

10. The method of claim 1, wherein said acrylic resin is provided in a percentage by weight of no more than 6% of the overall weight of the mix.

11. A vulcanizable rubber made with a mix combined with at least one reinforcing filler and at least one vulcanization accelerator, that comprises a compound containing at least one vulcanizable nitrile-based rubber and at least one acrylic resin for making a composite sole for shoes that is composed of a tread sole that comprises vulcanized rubber coupled to a polyurethane mid-sole, according to the method set forth in claim 1.

12. The mix of claim 11, comprising a vulcanizable nitrile rubber (NBR) of the medium-high nitrile type.

13. The mix of claim 11, comprising, as a nitrile rubber, a butadiene-acrylonitrile copolymer commonly known as NBR.

14. The mix of claim 11, wherein said acrylic resin is hydroxylated, with hidroxyl.

15. The mix of claim 14, wherein the hydroxyl is less than 2.

16. The mix of claim 15, wherein said resin is provided in a naphtha solvent.